

**Patterning through Notch signaling in developing embryos.
Insights from modeling.**

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Cells in developing embryos organize spatiotemporally, expressing subsets of genes that dictate their cell fates. Notch signaling is conserved among metazoa and underlies many developmental processes that involve spatiotemporal organization within tissues. Notch signaling mediates communication between adjacent cells through transmembrane receptors and ligands. In addition, this signaling is able to regulate the transcription of its own ligands. Early modeling of Notch signaling by Collier and colleagues (Collier et al. J Theor Biol 83(4):429-46, 1996) proposed it is able to drive periodic patterning that drives the selection of few among many precursor equivalent cells, as found empirically. In this talk I will present our theoretical and computational results focusing on two aspects of this pathway that have been shown to occur in developing embryos: the efficiency at signaling is ligand dependent and cells can be refractory to signaling. Consequences of differences in ligand efficiencies as well as mechanisms to drive refractoriness will be presented.

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